

WHAT IS CLAIMED IS:

1. A hard disk drive (HDD) comprising:
at least one rotatable disk;
at least one data transfer element; and
at least one HDD controller controlling the data transfer element to
execute commands in a queue, at least one command being selected for execution
based on at least one of: an optimized throughput benefit, and an optimized
operation rate benefit.
2. The HDD of Claim 1, wherein the throughput benefit is determined based
at least in part on a pipe length.
3. The HDD of Claim 1, wherein the throughput benefit is related to a pipe
length divided by the sum of a pipe length, a seek time, and an extra time.
4. The HDD of Claim 3, wherein a pipe length is a length of the sequential
pipe of commands in at least one of: servo identifications (SIDs), and number of blocks in
a pipe.
5. The HDD of Claim 1, wherein the operation rate benefit is determined

based at least in part on a number of commands in a pipe.

6. The HDD of Claim 1, wherein the operation rate benefit is related to a number of commands in a pipe to be executed divided by the sum of a pipe length, a seek time, and an extra time.

7. A hard disk drive controller executing logic comprising:

receiving a user selection of throughput optimization or operations per second optimization;

in response to a selection of throughput optimization, determining at least one next command to execute in a queue of commands by determining a pipe length and dividing the pipe length by the sum of a pipe length, at least one time period, and at least one probability; and

in response to a selection of operations per second optimization, determining a next command to execute in a queue of commands by determining a number of commands in a pipe and dividing the product by the sum of a pipe length, at least one time period, and at least one probability.

8. The controller of Claim 7, wherein the at least one time period is the sum of a seek time, and an extra time.

9. The controller of Claim 7, wherein the probability represents a miss probability.

10. A HDD comprising:

at least one disk;

a controller writing data to and reading data from the disk in response to commands in a queue, the controller determining a command to execute by invoking at least one of:

means for determining a throughput benefit associated with executing each command; and

means for determining an operational rate benefit associated with executing each command.

11. The HDD of Claim 10, wherein the means for determining a throughput benefit uses a pipe length in a numerator and a denominator of a quotient.

12. The HDD of Claim 11, wherein the means for determining a throughput benefit determines the pipe length and divides the pipe length by the sum of a pipe length and at least one time period and at least one probability.

13. The HDD of Claim 12, wherein the at least one time period is the sum of a seek time, and an extra time.

14. The HDD of Claim 12, wherein a pipe length is a length of the sequential pipe of commands in at least one of: servo identifications (SIDs), and number of blocks in a pipe.

15. The HDD of Claim 10, wherein the means for determining an operational rate benefit uses a number of commands in a pipe in a numerator and a pipe length in the denominator of a quotient.

16. The HDD of Claim 15, wherein the means for determining an operational rate benefit divides the number of commands by the sum of the pipe length and at least one time period and at least one probability.

17. The HDD of Claim 16, wherein the at least one time period is the sum of a seek time, and an extra time.

18. The HDD of Claim 16, wherein the probability represents a miss probability.